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FLOOD INSURANCE STUDY

TOWN OF OAKLAND, MAINE
KENNEBEC COUNTY

COMPLETED

JUNE 15, 1988

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Federal Emergency Management Agency

COMMUNITY NUMBER - 230242

NOTICE TO
FLOOD INSURANCE STUDY USERS

Communities participating in the National Flood Insurance Program (NFIP) have established repositories of flood hazard data for floodplain management and flood insurance study purposes. This Flood Insurance Study (FIS) may not contain all data available within the repository. It is advisable to contact the community repository for any additional data.

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FLOOD INSURANCE STUDY
TOWN OF OAKLAND, KENNEBEC COUNTY, MAINE

1.0 INTRODUCTION

1.1 Purpose of Study

This Flood Insurance Study investigates the existence and severity of flood hazards in the Town of Oakland, Kennebec County, Maine, and aids in the administration of the National Flood Insurance Act of 1968 and the Flood Disaster Protection Act of 1973. This study has developed flood risk data for various areas of the community that will be used to establish actuarial flood insurance rates and assist the community in its efforts to promote sound floodplain management. Minimum floodplain management requirements for participation in the National Flood Insurance Program (NFIP) are set forth in the Code of Federal Regulations at 44 CFR, 60.3.

In some states or communities, floodplain management criteria or regulations may exist that are more restrictive or comprehensive than the minimum Federal requirements. In such cases, the more restrictive criteria take precedence and the state (or other jurisdictional agency) will be able to explain them.

1.2 Authority and Acknowledgments

The sources of authority for this Flood Insurance Study are the National Flood Insurance Act of 1968 and the Flood Disaster Protection Act of 1973.

The hydrologic and hydraulic analyses for this study were prepared by the U. S. Geological Survey (USGS) during the preparation of the Flood Insurance Study for the Town of Belgrade, for the Federal Emergency Management Agency (FEMA), under Inter-Agency Agreement No. EMW-E-1823, Project Order No. 11. This work was completed in August 1985.

1.3 Coordination

On June 20, 1986, the community was notified by FEMA of the initiation of a Flood Insurance Study for the Town of Oakland.

On November 5, 1986, a final Consultation and Coordination Officer's (CCO) meeting was held with representatives from FEMA, the town, and the study contractor to review the results of this study.

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2.0 AREA STUDIED

2.1 Scope of Study

This Flood Insurance Study covers the incorporated area of the Town of Oakland, Kennebec County, Maine. The area of study is shown on the Vicinity Map (Figure 1).

The following flooding sources were studied by detailed methods for their entire shorelines within the community: Messalonskee Lake (also known as Snow Pond) and Salmon Lake (also known as McGrath and Ellis Ponds). The areas studied by detailed methods were selected with priority given to all known flood hazard areas and areas of projected development.

Messalonskee Stream, East Pond, and a few unnamed streams and ponds were studied by approximate methods. Approximate analyses were used to study those areas having a low development potential or minimal flood hazards.

2.2 Community Description

The Town of Oakland is located in northeastern Kennebec County in southern Maine, approximately 10 miles north-northwest of Augusta, Maine. It is bordered by the Town of Fairfield to the north, the City of Waterville to the east, the Town of Sidney to the south, the Town of Smithfield to the east, and the Town of Belgrade to the west.

The major lakes in the town lie in the Belgrade chain. The lakes that were studied have dams on the outlets. These dams have deepened and enlarged the lakes; however, their basic pattern was established as a result of the last ice-age glaciation. The last glaciation in Maine ended approximately 12,000 years ago; thus, the lakes are considered "young" in geological terms. The Belgrade Lakes are mainly valley lakes, created by glacial deposits that blocked normal drainage and became dams. Since the old valleys and the movement of the glacier tended to be north to south in orientation, the Belgrade Lakes tend to be elongated and run in a general north to south direction. The quality of the water in the lakes is very good and helps make the area good for recreational activities (Reference 1). Selected lake data are given in the following tabulation (References 2 and 3):

Water Body	Water-Surface (acres)	Maximum Depth (feet)	Drainage Area (square miles)
Messalonskee Lake	3,510	113	177
Salmon Lake	1,048	57	8.52

Oakland, a town with numerous lakes and ponds, is experiencing rapid growth. The lakes and ponds attract the development of seasonal and

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FIGURE 1

FEDERAL EMERGENCY MANAGEMENT AGENCY

TOWN OF OAKLAND, ME
(KENNEBEC CO.)

APPROXIMATE SCALE
2000 0 2000 4000 6000 FEET

VICINITY MAP

permanent homes. Within the floodplains studied, development generally consists of single family seasonal residences that are occupied only in the summer. Oakland is a recreational area and has many commercial establishments that serve campers and tourists.

The climate of Oakland is typified as humid continental. Oakland has moderately cold winters and mild summers. The average annual temperature is 45.1 degrees Fahrenheit (°F). The mean annual precipitation is 41.0 inches, and snowfall averages 77.0 inches annually (Reference 4). Water from snowmelt is a significant source of runoff during March and April.

2.3 Principal Flood Problems

Flooding problems in Oakland occur principally along the shores of Salmon and Messalonskee Lakes. Flooding generally occurs in the spring from the rapid runoff caused by heavy rains combined with snowmelt. Flooding has also occurred in the fall as a result of heavy rains.

Notable historic flood data, supplied by Central Maine Power Company and the Belgrade Lakes Association, are summarized in the following tabulation:

Water Body And Date	Historic Flood Elevations (In feet)	Recurrence Interval (In years)
Messalonskee Lake		
March 1936	237.3	60
December 1973	237.6	90
June 1984	236.4	14
Salmon Lake		
September 1954	278.7	10
December 1973	279.2	100

2.4 Flood Protection Measures

The numerous lakes and ponds in the Belgrade chain, although not designed as flood protection reservoirs, do exert an impact in reducing flood peaks. The Salmon Lake outlet dam is generally operated to lower lake levels to prevent flooding during periods of anticipated high water.

Prior to 1977, Central Maine Power Company monitored water-surface elevations of major lakes in the basin of which the Town of Oakland is a part. After that date, the company sold their water rights on these lakes, except for Messalonskee Lake, to a private enterprise. In 1984, the Belgrade Lakes Association bought the water rights on Salmon Lake and currently manage the lake level.

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The Town of Oakland has adopted the minimum shoreland zoning ordinance as required by the State of Maine (Reference 5). This ordinance serves to protect lake areas by restricting building to reduce flood damage problems.

3.0 ENGINEERING METHODS

For the flooding sources studied in detail in the community, standard hydrologic and hydraulic study methods were used to determine the flood hazard data required for this study. Flood events of a magnitude which are expected to be equaled or exceeded once on the average during any 10-, 50-, 100-, or 500-year period (recurrence interval) have been selected as having special significance for floodplain management and for flood insurance rates. These events, commonly termed the 10-, 50-, 100-, and 500-year floods, have a 10, 2, 1, and 0.2 percent chance, respectively, of being equaled or exceeded during any year. Although the recurrence interval represents the long term average period between floods of a specific magnitude, rare floods could occur at short intervals or even within the same year. The risk of experiencing a rare flood increases when periods greater than 1 year are considered. For example, the risk of having a flood which equals or exceeds the 100-year flood (1 percent chance of annual exceedence) in any 50-year period is approximately 40 percent (4 in 10), and, for any 90-year period, the risk increases to approximately 60 percent (6 in 10). The analyses reported herein reflect flooding potentials based on conditions existing in the community at the time of completion of this study. Maps and flood elevations will be amended periodically to reflect future changes.

3.1 Hydrologic and Hydraulic Analyses

Analyses were carried out to establish the peak elevation-frequency relationships for each flooding source studied in detail affecting the community.

Elevations of the selected recurrence intervals for Messalonskee Lake and Salmon Lake were based on a log-Pearson Type III distribution of annual peak elevation data (Reference 6). The principal source of data for the water bodies was from records of elevations maintained by Central Maine Power Company for the period from 1932 to 1977.

All elevations are referenced to the National Geodetic Vertical Datum of 1929 (NGVD).

Elevations for floods of the selected recurrence intervals for Messalonskee Lake and Salmon Lake are shown in Table 1. The normal pond elevations for Messalonskee Lake and Salmon Lake are, respectively, 235.4 feet and 278.0 feet.

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TABLE 1 - SUMMARY OF STILLWATER ELEVATIONS

FLOODING SOURCE AND LOCATION	ELEVATION (feet) 10-YEAR	50-YEAR	100-YEAR	500-YEAR
MESSALONSKEE LAKE				
Entire shoreline within corporate limits	*	*	237.7	*
SALMON LAKE				
Entire shoreline within corporate limits	*	*	279.2	*

*Not computed

4.0 FLOODPLAIN MANAGEMENT APPLICATIONS

The NFIP encourages State and local governments to adopt sound floodplain management programs. Therefore, each Flood Insurance Study provides 100-year flood elevations and delineations of the 100- and 500-year floodplain boundaries and 100-year floodway to assist communities in developing floodplain management measures.

4.1 Floodplain Boundaries

To provide a national standard without regional discrimination, the 1 percent annual chance (100-year) flood has been adopted by FEMA as the base flood for floodplain management purposes. The 0.2 percent annual chance (500-year) flood is employed to indicate additional areas of flood risk in the community. For the flooding sources studied in detail, the 100-year floodplain boundary has been delineated using topographic maps at a scale of 1:24,000 with a contour interval of 10 feet (Reference 7).

For the flooding sources studied by approximate methods, the 100-year floodplain boundary has been delineated using the Flood Hazard Boundary Map for the Town of Oakland (Reference 8).

The 100-year floodplain boundaries are shown on the Flood Insurance Rate Map (Exhibit 1). On this map, the 100-year floodplain boundary corresponds to the boundary of the areas of special flood hazards, (Zones A and AE), and the 500-year floodplain boundary corresponds to the boundary of areas of moderate flood hazards. In cases where the 100- and 500-year floodplain boundaries are close together, only the 100-year floodplain boundary has been shown. Small areas within the floodplain boundaries may lie above the flood elevations but cannot be shown due to limitations of the map scale and/or lack of detailed topographic data.

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For the streams studied by approximate methods, only the 100-year floodplain boundary is shown on the Flood Insurance Rate Map (Exhibit 2).

4.2 Floodways

The floodway is the channel of a stream, plus any adjacent floodplain areas, that must be kept free of encroachment so that the 100-year flood can be carried without substantial increases in flood heights.

The concept of a floodway does not apply in areas of lacustrine flooding. Therefore, no floodway was computed or delineated for this study.

5.0 INSURANCE APPLICATION

For flood insurance rating purposes, flood insurance zone designations are assigned to a community based on the results of the engineering analyses. These zones are as follows:

Zone A

Zone A is the flood insurance rate zone that corresponds to the 100-year floodplains that are determined in the Flood Insurance Study by approximate methods. Because detailed hydraulic analyses are not performed for such areas, no base flood elevations or depths are shown within this zone.

Zone AE

Zone AE is the flood insurance rate zone that corresponds to the 100-year floodplains that are determined in the Flood Insurance Study by detailed methods. In most instances, whole-foot base flood elevations derived from the detailed hydraulic analyses are shown at selected intervals within this zone.

Zone AH

Zone AH is the flood insurance rate zone that corresponds to the areas of 100-year shallow flooding (usually areas of ponding) where average depths are between 1 and 3 feet. Whole-foot base flood elevations derived from the detailed hydraulic analyses are shown at selected intervals within this zone.

Zone AO

Zone AO is the flood insurance rate zone that corresponds to the areas of 100-year shallow flooding (usually sheet flow on sloping terrain) where average depths are between 1 and 3 feet. Average whole-foot depths derived from the detailed hydraulic analyses are shown within this zone.

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Zone A99

Zone A99 is the flood insurance rate zone that corresponds to areas of the 100-year floodplain that will be protected by a Federal flood protection system where construction has reached specified statutory milestones. No base flood elevations or depths are shown within this zone.

Zone V

Zone V is the flood insurance rate zone that corresponds to the 100-year coastal floodplains that have additional hazards associated with storm waves. Because approximate hydraulic analyses are performed for such areas, no base flood elevations are shown within this zone.

Zone VE

Zone VE is the flood insurance rate zone that corresponds to the 100-year coastal floodplains that have additional hazards associated with storm waves. Whole-foot base flood elevations derived from the detailed hydraulic analyses are shown at selected intervals within this zone.

Zone X

Zone X is the flood insurance rate zone that corresponds to areas outside the 500-year floodplain, areas within the 500-year floodplain, and to areas of 100-year flooding where average depths are less than 1 foot, areas of 100-year flooding where the contributing drainage area is less than 1 square mile, and areas protected from the 100-year flood by levees. No base flood elevations or depths are shown within this zone.

Zone D

Zone D is the flood insurance rate zone that corresponds to unstudied areas where flood hazards are undetermined, but possible.

6.0 FLOOD INSURANCE RATE MAP

The Flood Insurance Rate Map is designed for flood insurance and floodplain management applications.

For flood insurance applications, the map designates flood insurance rate zones as described in Section 5.0 and, in the 100-year floodplains that were studied by detailed methods, shows selected whole-foot base flood elevations or average depths. Insurance agents use the zones and base flood elevations in conjunction with information on structures and their contents to assign premium rates for flood insurance policies.

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For floodplain management applications, the map shows by tints, screens, and symbols, the 100- and 500-year floodplains. Floodways and the locations of selected cross sections used in the hydraulic analyses and floodway computations are shown where applicable.

7.0 OTHER STUDIES

A Flood Insurance Study for the Town of Belgrade is currently being prepared (Reference 9). The results of that study will be in exact agreement with the results of this study.

A Flood Insurance Study for the Town of Smithfield has been published (Reference 10). The results of this study will be in exact agreement with the results of that study.

Due to its more detailed nature, this Flood Insurance Study supersedes the Flood Hazard Boundary Map for the Town of Oakland (Reference 8).

8.0 LOCATION OF DATA

Information concerning the pertinent data used in preparation of this study can be obtained by contacting FEMA, the Natural and Technological Hazards Division, J. W. McCormack Post Office and Courthouse Building, Room 462, Boston, Massachusetts 02109.

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